

Additional notes on the fauna of Agromyzidae (Diptera) in Switzerland

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Additional notes on the fauna of Agromyzidae (Diptera) in Switzerland.

- New faunistic data on the Swiss Agromyzidae are given. 144 species are recorded including 92 species found in Switzerland for the first time. Each species included is accompanied by information on its host plants and geographical distribution. The current list of the Swiss Agromyzidae thus embraces 232 species.

Keywords: Diptera - Agromyzidae - faunistics - biology - Switzerland.

INTRODUCTION

The Agromyzidae, with its 1165 species described from the Palearctic Region (Scheirs *et al.*, 1999) and 843 species from Europe (Martinez, 1998) is one of the larger families of Diptera. The Swiss fauna of Agromyzidae is little studied with 140 recorded species in 19 genera (Martinez, 1998). On the other hand, the study of Agromyzidae in Europe and especially in the other countries of Central Europe is relatively advanced (cf. e.g. Griffiths, 1980; Nowakowski, 1973; Spencer, 1964, 1966, 1972b, 1976; Zlobin, 1992, 1993a, 1993b, 1993c, 1993d, 1994, 1995, 2003a, 2003b).

The following species were described directly from the territory of Switzerland (type locality in parentheses, abbreviation of cantons in following chapter): *Agromyza alnibetulae* Hendel, 1931 (type locality: Switzerland); *Chromatomyia gentianella* (Hendel, 1932) (Switzerland); *Ch. hoppiella* Spencer, 1990 (**GR**: Lenzerheide); *Liromyza polygalae* Hering, 1927 (**TI**: Lugano); *Napomyza cichorii* Spencer, 1966 (**VS**: Orsières); *Phytobia mallochi* Hendel, 1924 (**GR**: Peist); *Phytomyza abdita* Hering, 1927 (**ZH**: Zürichberg); *P. alpestris* Hendel, 1920 (**GR**: St. Moritz); *P. hoppi* Hering, 1925 (**SG**: Pfäfers); *P. narcissiflorae* Hering, 1928 (**GR**: Parpan); *P. hoppiana* Hering, 1931 (**GR**: Zernez) as a synonym of *P. pulsatiellae* Hering, 1924 (Spencer, 1976); *P. thalictri* Escher-Kündig in Rougemont, 1912 (Switzerland); *P. virgaureae* Hering, 1926 (**SZ**: Rigi); *P. thymi* Hering, 1928 (**GR**: Lenzerheide) and *Pseudonapomyza europaea* Spencer, 1973 (**VS**: Stalden). *P. atragenis* Hendel, 1931 (**GR**: Zernez) and *P. philactaeae* Hering, 1932 (**GR**: Vals) were synonymized with *P. kaltenbachi* Hendel, 1922 (Hendel, 1931-6; Papp, 1984). *P. prenanthidis* Hering, 1932 (**SG**: Pfäfers) was synonymized with *P. sonchi* Robineau-Desvoidy, 1851 by Hendel (1931-6). Later Spencer (1965) synonymized *P. sonchi* with *P. marginella* Fallén, 1823.

The new *Material examined* by the author provided records on 144 species including 92 species which represent faunistic novelties for Switzerland. In total 232 species are now known from Switzerland representing 28% of the European fauna.

Agromyzids are mostly small to very small flies with a dark body sometimes showing a light metallic shine (*Melanagromyza* spp.), or a distinct yellow pattern (e.g. *Liriomyza* spp., *Phytoliriomyza* spp., *Cerodontha* spp.). The length of wings varies between 0.9 and 4.5 mm. The adult thorax is massive and the relatively broad abdomen consists of 6 visible segments. The eyes are broadly separated in both sexes, 1-2 rows of short orbital setulae are developed in addition to the regular orbital setae (except for *Selachops*).

Trophic preferences are phytophagous, larvae typically feed upon tissues of living plants and form characteristic mines. The larvae are cylindrical, slightly tapered on both ends, their body consists of the cephalic segment, 3 thoracic and 8 abdominal segments. The length of body varies between 1.5-3.0 mm but the body of *Phytobia* is unusually long, sometimes reaching 25 mm. Larvae of most species live in the parenchym of leaves, some mine the surface of stems. Larvae of *Phytobia* feed upon bast of some wood plants. *Hexomyza* larvae form galls on twigs of trees and bushes. Larvae of *Melanagromyza*, *Napomyza* and *Ophiomyia* (partially) live within stems and on roots of host plants. Some *Phytomyza* larvae are specialized for life in flowers.

Most Agromyzidae are oligophagous and their larvae prefer closely related species, genera or families of host plants. Some species are even monophagous and mine only one host plant. Only a relatively small group of agromyzids are widely polyphages and their spectrum of host plants includes numerous plants from many different families. *Chromatomyia horticola* (Goureau, 1851) may be mentioned as the best known and widely distributed polyphagous species mining a large series of plants.

A review of Central European agromyzids with a certain economic importance was published by Spencer (1973). Some species used to be included among serious pests of crops, e.g. *Liriomyza huidobrensis* (Blanchard, 1926) recorded also from Switzerland (Martinez, 1998). However, many species damage only the general or aesthetical appearance of plants, and economical losses are not too serious. More important economic losses are known only during the mass occurrence of some species living on cereals, (*Agromyza megalopsis* Hering, 1933 or *A. nigrella* [Rondani, 1875]), on Fabaceae and Brassicaceae (*Phytomyza rufipes* Meigen, 1830) and some ornamental plants (*Ch. horticola*, *L. huidobrensis*). Larvae of *Phytobia carbonaria* (Zetterstedt, 1848) bore the cambium of apple twigs.

The density of agromyzid populations is very often seriously influenced by hymenopteran parasites from families Braconidae, Chalcididae, Eulophidae and Ichneumonidae. The strictly monophagous species with their close relations to host plants may be used as suitable models for ecological research.

MATERIAL AND METHODS

Species originating from Switzerland were found in the following collections:

CBM private collection Bohuslav Mocek, Hradec Králové, Czech Republic, 8 specimens.

- CMB** private collection Miroslav Barták, Praha, Czech Republic, 75 specimens. These specimens were collected with a Malaise Trap of the type M. Barták (Roháček *et al.*, 1998) above the tree line on 2000 m a.s.l. in the Alps of the Canton Graubünden.
- MHNG** Muséum d'histoire naturelle, Genève, Switzerland (Bernhard Merz), 284 specimens.
- ZMUC** Zoological Museum, University Copenhagen, Denmark (Rudolf Meier), 33 specimens.

Genera and species are arranged alphabetically in the two subfamilies Agromyzinae and Phytomyzinae. All relevant data from locality labels are included. Only selected important synonymy and new *References* (with regard to Switzerland) are quoted here, for full data see Martinez (1998), Papp (1984), Spencer & Martinez (1987) and Spencer (1990, 1992).

Nomenclature of Agromyzidae and plant names follow Spencer (1990).

The localities are grouped according to cantons (districts) of Switzerland and the following abbreviations are used: **AG** = Aargau; **BE** = Bern; **FR** = Fribourg; **GE** = Genève; **GL** = Glarus; **GR** = Graubünden (= Grisons); **JU** = Jura; **NE** = Neuchâtel; **SG** = St. Gallen; **SH** = Schaffhausen; **SZ** = Schwyz; **TI** = Ticino; **VD** = Vaud; **VS** = Valais; **ZH** = Zürich.

MT on locality labels means Malaise Trap.

The species which are new to Switzerland are marked with an asterisk (*) before the name.

LIST OF SPECIES

Subfamily AGROMYZINAE

Agromyza abiens Zetterstedt, 1848

Reference: Martinez, 1998: 269.

Material examined: **GE**: Cartigny, Moulin de Vert, 350 m a.s.l., 1 ♀, 2.vi.2002. **GR**: Lenzerheide near Sanaspans, 1500 m a.s.l., 1 ♀, 7.viii.1992. **VS**: Leuk Bahnhof, 625 m a.s.l., 1 ♂, 15.v.2000. **ZH**: Zürich, 500 m a.s.l., 1 ♀, 10.viii.1991. All B. Merz leg. (MHNG).

Notes: This relatively large species with the orange frons and a broad epistoma was described from Sweden. *A. abiens* is generally distributed and locally common in Europe. Its occurrence in Japan was also confirmed. Larvae form broad leaf mines on Boraginaceae. Records include the genera *Anchusa*, *Asperugo*, *Borago*, *Cynoglossum*, *Echium*, *Lycopsis*, *Pentaglottis*, *Pulmonaria* and *Symphytum*.

Agromyza albipennis Meigen, 1830

Reference: Martinez, 1998: 269.

Material examined: **GE**: Chancy Bord du Rhône, 350 m a.s.l., 1 ♂, 28.vii.2002. B. Merz leg. (MHNG); Russin, Les Bailleys, 405 m a.s.l., 1 ♂, 1.vii.2002, B. Merz & Herrmann leg. (MHNG).

Notes: *A. albipennis* is a Holarctic species which is common in Europe, especially in its temperate and northern parts. It is less known from the Mediterranean area

(only Italy and Spain). Its occurrence in Japan, Kamchatka and North America (United States and Canada) is also documented. Larvae feed singly, forming linear-blotch mine on Gramineae, particularly on *Phalaris arundinacea*, less commonly on *Poa* and *Hordeum*, rarely on other grasses.

****Agromyza bicaudata*** (Hendel, 1920)

Material examined: **VS**: Leuk Pfywald, 630 m a.s.l., 1 ♂, 21.iv.1998, B. Merz & Botta leg. (MHNG).

Notes: The type series includes localities in Germany and Austria. It is distributed in temperate Europe (Austria, British Isles, the Czech Republic, Germany, Hungary, Lithuania, Poland and Slovakia). Hendel (1931-6) mentioned this species from Finland and South Russia. This species is unusual in having a strongly developed presutural dc and specific male terminalia. Very probably a grass-feeder though its biology is not precisely known. New for Switzerland.

Agromyza bromi Spencer, 1966

Reference: Martinez, 1998: 269.

Material examined: **VS**: Leuk Platten, 630 m a.s.l., 1 ♂, 22.iv.1998, B. Merz & B. Botta leg. (MHNG). **ZH**: Zürich Irchel, 500 m a.s.l., 1 ♂, 16.viii.1998, B. Merz leg. (MHNG).

Notes: The species is known from temperate Europe. The only recorded host is *Ceratochloa unioides* (= *Bromus catharticus*) but other grasses are doubtless also attacked.

****Agromyza cinerascens*** Macquart, 1835

Material examined: **GE**: Bernex, Signal, 510 m a.s.l., 1 ♂, 21.iii.1999; Chancy, La Laire, 350 m a.s.l., 1 ♂, 1.iv.2002; Russin, Les Baillets (Allondon), 390 m a.s.l., 1 ♂, 24.iii.2003. **ZH**: Zürich Albisgütli, 490 m a.s.l., 1 ♂, 9.iv.1997; Zürich Allmend, 440 m a.s.l., 1 ♀, 17.iv.1996. All B. Merz leg. (MHNG).

Notes: This Palearctic species was described from France; it is known from many countries of Europe (Austria, Belarus, Belgium, Croatia, the Czech Republic, Denmark, England, Estonia, Finland, Germany, Hungary, Italy incl. Sicily, Lithuania, the Netherlands, Norway, Poland, Romania, Slovakia, Spain, Russia, and Sweden), North Africa (Egypt and Tunisia) and Japan. Host plants are Gramineae, most frequently *Dactylis glomerata*, sometimes *Secale cereale*. New for Switzerland.

****Agromyza frontella*** (Rondani, 1875)

Material examined: **GE**: Bernex, Signal, 510 m a.s.l., 1 ♂, 8.vii.2001, B. Merz leg. (MHNG). **VS**: Leuk Brentjong, 920 m a.s.l., 1 ♂, 15.v.2000, B. Merz leg. (MHNG).

Notes: This Holarctic species was described from Italy (Parma). It is common in Austria, Belarus, the Czech Republic, Denmark, England, France, Germany, Hungary, Italy, Lithuania, Poland, Russia, Slovakia, Spain, Sweden, Canada, United States, Afghanistan, Israel, and Turkey. *A. frontella* belongs to the *Agromyza* species feeding on Leguminosae. The larva forms a characteristic mine on *Medicago sativa* and other *Medicago* spp., but also on *Melilotus*. New for Switzerland.

****Agromyza hendeli* Griffiths, 1963**

Material examined: **ZH:** Zürich Irchel, 500 m a.s.l., 1 ♂, 16.viii.1998, B. Merz leg. (MHNG).

Notes: *A. hendeli* is distributed in temperate Europe and known from Austria, Belgium, the Czech Republic, Denmark, England, Estonia, Germany, North Italy, Latvia, Lithuania, the Netherlands, Poland, Scotland and Slovakia. The larvae form a broad blotch mine on *Phragmites communis*. New for Switzerland.

****Agromyza idaeiana* Hardy, 1853**

Material examined: **GR:** San Vittore, Rebberg, 290 m a.s.l., 1 ♂, 8.iv.1997, B. Merz leg. (MHNG). **VS:** Leuk Platten, 625 m a.s.l., 1 ♂, 30.v.2002, B. Merz leg. (MHNG).

Notes: A Holarctic species known in the literature under the junior synonym *Agromyza potentillae* (Kaltenbach, 1864) (Bland, 2000). The species seems to be common in Europe (Austria, Belgium, the Czech Republic, England, Estonia, Finland, Germany, Hungary, Italy (Sardinia), Lithuania, the Netherlands, Norway, Poland, Russia, Slovakia, Spain, Sweden) as well as in Central and East Palaearctic (Uzbekistan, Kuril Islands and Japan). Largely distributed also in North America (Canada and United States). The larva forms a linear mine which later widens to a conspicuous blotch on Rosaceae (*Agrimonia*, *Alchemilla*, *Comarum*, *Filipendula*, *Fragaria*, *Geum*, *Potentilla*, *Rosa*, *Rubus* and *Sanguisorba*). New for Switzerland.

****Agromyza lucida* Hendel, 1920**

Material examined: **GE:** Cartigny, Moulin de Vert, 350 m a.s.l., 1 ♂, 9.vii.2002, B. Merz leg. (MHNG).

Notes: *A. lucida* is known from the Holarctic Region and distributed especially in Europe (Austria, the Czech Republic, Denmark, England, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, the Netherlands, Poland, Russia, Scotland, Slovakia, Spain, Sweden) and North America (Canada). Its occurrence is also confirmed in India. The larvae form a broad blotch mine on Gramineae, known foodplants are *Glycera maxima* and *Deschampsia caespitosa*. New for Switzerland.

****Agromyza marionnae* Griffiths, 1963**

Material examined: **ZH:** Zürich Albisgütli, 500 m a.s.l., 1 ♂, 2.iv.1997, B. Merz leg. (MHNG).

Notes: The species was described from England and later recorded from Germany, Ireland, Lithuania and Spain. According to Pakalniškis (1996) the larva mines stems of *Vicia cracca* and *V. tetrasperma* at borders of mixed forest and in urban cenoses. New for Switzerland.

***Agromyza mobilis* Meigen, 1830**

Reference: Martinez, 1998: 269.

Material examined: **GE:** Bernex Chante Merle, 420 m a.s.l., 1 ♂, 7.viii.2000, B. Merz & G. Bächli leg. (MHNG). **GR:** Zerne, Gondas, 1480 m a.s.l., 1 ♂, 8.viii.1996, B. Merz & G. Bächli leg. (MHNG). **SH:** Barga-Mülital, 650 m a.s.l., 1 ♂,

28.viii.1992, B. Merz leg. (MHNG). **TI**: Gordola, 210 m a.s.l., 1 ♂, 14.ix.1989, B. Merz leg. (MHNG). **ZH**: Zürich Irchel, 500 m a.s.l., 1 ♂, 24.v.1996, B. Merz leg. (MHNG).

Notes: *A. mobilis* is a species with a Palaearctic distribution, known to occur especially in Europe but also in China and Japan. It occurs namely in countries of temperate and northern Europe. In the Mediterranean area it was recorded only from Italy, Spain and the former Yugoslavia. *Triticum* represents the only confirmed known host plant but the larvae mine very probably also other species of Graminae.

Agromyza nana Meigen, 1830

Reference: Martinez, 1998: 269.

Material examined: **GR**: Lenzerheide, 2000 m a.s.l., 1 ♂, 14.-21.vii.2000, 2 ♂♂, 23.-31.viii.2000, pasture, MT, B. Merz leg. (CMB). **SH**: Merishausen, Ladel, 700 m a.s.l., 1 ♂, 13.v.1991, B. Merz leg. (MHNG). **VS**: Eggerberg, 850 m a.s.l., 1 ♂, 24.vi.2000, B. Merz leg. (MHNG); Visperterminen Rothorn, 2250 m a.s.l., 1 ♂, 26.viii.2001, B. Merz & Landry leg. (MHNG); Saas-Fee, 2400 m a.s.l., 1 ♂, 22.vii.1965, 2 ♂♂, 23.vii.1965, O. Lomholdt leg. (ZMUC).

Notes: The Palaearctic *A. nana* belong to the species of the *orobi*-group (Zlobin, 2000), which live in Leguminosae (*Medicago sativa*, *Trifolium*, *Melilotus*). With its morphology and the structure of male genitalia it is very similar to other species of this group, especially to *A. frontella* (Rondani, 1875), but stridulation border is species-specific (Tschirnhaus, 1971). Generally common in the Palaearctic Region including Egypt, Marocco, Tunisia, Turkey and eastern Siberia. Also recorded from India.

Agromyza nigripes Meigen, 1830

References: Griffiths, 1963: 132; Martinez, 1998: 269.

Material examined: **GE**: Jussy, Prés-de-Villette, 475 m a.s.l., 1 ♂, 2.viii.2002, B. Merz leg. (MHNG). **ZH**: Zürich Albisgütli, 470 m a.s.l., 1 ♂, 19.viii.1997, B. Merz & Botta leg. (MHNG); Zürich Hönggerberg, 600 m a.s.l., 1 ♂, 18.vi.1992, B. Merz leg. (MHNG); Zürich Zürichberg, 650 m a.s.l., 1 ♂, 26.vii.1995, S. Ungricht leg. (MHNG).

Notes: The species is known mainly from the Holarctic Region, (Europe and Canada), but it is also recorded from the Oriental Region (India). The larva forms a long, widening mine on the upper leaf surface of *Glyceria maxima* and the species also commonly occurs on *Holcus*.

Agromyza polygoni Hering, 1941

Reference: Martinez, 1998: 269.

Material examined: **GR**: Zuoz, Nüd, 1700 m a.s.l., 1 ♂, 7.viii.1996, B. Merz & G. Bächli leg. (MHNG).

Notes: The species was described from Germany and recently it was also recorded from the Czech Republic, France, Lithuania, Poland and Switzerland. The larva forms on *Polygonum bistorta* an irregular linear-blotch mine, which is not associated to the midrib.

**Agromyza prespans* Spencer, 1957

Material examined: **TI**: Gordola, Bolle di Magadino, Zeltfalle, 220 m a.s.l., 1 ♂, 19.vi.1995, B. Merz & G. Bächli leg. (MHNG).

Notes: Spencer (1957) described this species from Macedonia. It is also known from Austria, British Isles, Croatia (Dalmatia), the Czech Republic, France, Hungary, Poland, Slovakia and Sweden. The larva forms a broad mine on *Triticum aestivum* and other grasses. New for Switzerland.

****Agromyza pseudoreptans* Nowakowski, 1967**

Material examined: **GE:** Chancy, La Laiterie, 350 m a.s.l., 1 ♂, 1.vii.2001; Dardagny, Roulave, 420 m a.s.l., 1 ♂, 30.vi.2001. **GR:** Valbella, Casoja, 1550 m a.s.l., 1 ♂, 13.vii.1996. **SH:** Merishausen-Ladel, 600 m a.s.l., 1 ♀, 28.vii.1992. **ZH:** Flaach, Thurauen, 350 m a.s.l., 1 ♀, 1.ix.1993; Zürich Waldgarten, 450 m a.s.l., 2 ♂♂, 24.v.1996; 460 m a.s.l., 1 ♂, 1.v.1997. All B. Merz leg. (MHNG).

Notes: This Holarctic species is common in Austria, Belgium, Canary Islands, the Czech Republic, Denmark, England, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, the Netherlands, Norway, Poland, Russia, Scotland, Slovakia, Sweden and North America (Canada and United States, incl. Alaska). The larva forms elongate linear-blotch mine, normally adjoining margin of leaves of *Urtica dioica*. New for Switzerland.

****Agromyza pseudorufipes* Nowakowski, 1964**

Material examined: **GR:** Valbella, Casoja, 1550 m a.s.l., 1 ♂, 13.vii.1996, B. Merz leg. (MHNG).

Notes: The species was described from Poland and reliable records are known from the Czech Republic, England, Germany, Lithuania, Poland, Romania, Slovakia and Japan. New for Switzerland.

****Agromyza quadriseta* Zlobin, 2001**

Material examined: **GE:** Bernex, Signal, 510 m a.s.l., 1 ♂, 24.v.2002. **ZH:** Embrach, Haumüli, 430 m a.s.l., 1 ♂, 29.v.1998, B. Merz leg. (MHNG).

Notes: This species was recently described from Estonia, Lithuania, Finland and Russia (holotype). *A. quadriseta* belongs to the large group of Palaearctic species having long presutural dorsocentrals and the costal vein strongly extending to M_{1+2} . Biology of this species is unknown. New for Switzerland.

****Agromyza rondensis* Strobl, 1900**

Material examined: **GE:** Cartigny, Moulin de Vert, 350 m a.s.l., 1 ♂, 4.v.2003, B. Merz & M. Eggenberger leg. (MHNG).

Notes: The species was described from Spain and later on recorded in other countries of West Palaearctic (Austria, Belarus, Belgium, Canary Islands, Crete, Croatia, the Czech Republic, England, Estonia, France, Germany, Hungary, Italy, Lithuania, Norway, Poland, Portugal, Romania, Scotland, Slovakia, Sweden and Turkey). The larva forms a leaf mine on Gramineae (*Arrhenaterum*, *Bromus*, *Calamagrostis*, *Dactylis*, *Hordeum*, *Poa*, *Secale* and *Triticum*). New for Switzerland.

***Agromyza sulfuriceps* Strobl, 1898**

Reference: Martinez, 1998: 269.

Material examined: **VS:** Saas-Fee, 2400 m a.s.l., 1 ♂, 22.vii.1965, O. Lomholdt leg. (ZMUC).

Notes: This small species with yellow frons and bright yellow antennae is known especially from the Holarctic Region but also recorded from tropical Africa (Nigeria). Host plants of this species are *Potentilla* and *Sanguisorba*. The larva forms a narrow upper surface gallery to start, then broadening and zigzagging to create a false blotch.

****Melanagromyza astragali*** Spencer, 1976

Material examined: **SZ:** Brunni, 900 m a.s.l., 1 ♂, 26.vi.1990, B. Petersen leg. (ZMUC). **VS:** Leuk Brentjong, 930 m a.s.l., 1 ♂, 3.v.1990, 900 m a.s.l., 1 ♂, 1.vi.1991, B. Merz leg. (MHNG).

Notes: This species was described by Spencer (1976) from Sweden from stems of *Astragalus glycyphyllus* and later on it was recorded from other countries of Europe (Czech Republic, France, Germany, Lithuania and Slovakia). New for Switzerland.

Melanagromyza cunctans (Meigen, 1830)

Reference: Martinez, 1998: 269.

Material examined: **VS:** Visperterminen Dorf, 1400 m a.s.l., 1 ♂, 26.viii.2001, B. Merz & Landry leg. (MHNG). **ZH:** Zürich Irchel, 500 m a.s.l., 1 ♂, 16.viii.1998, B. Merz leg. (MHNG).

Notes: The species was described from Spain and its known distribution area includes other countries of temperate Europe and Scandinavia (Sweden) but it seems to be more common in the Mediterranean area (Canary Islands, Corsica, Crete, Croatia, Egypt, Italy, Maltese Islands and Turkey) and the Afrotropical Region (including Madagascar). Its occurrence was also confirmed in Central Palaearctic (Uzbekistan) and the Oriental Region (India). The larva forms a slender stem-gall on *Lotus corniculatus* (Leguminosae).

****Ophiomyia aeneonitens*** (Strobl, 1893)

Material examined: **VS:** Leuk Pfynwald, 600-650 m a.s.l., 1 ♂, 15.v.1996, B. Merz & G. Bächli leg. (MHNG).

Notes: The sole member of the genus with typically white squamae and fringes, and lacking the posterior crossvein on the wing. This is the second record of this species in Europe. It was described from a warm area of Austria. Biology of this species is not known. New for Switzerland.

****Ophiomyia campanularum*** Starý, 1930

Material examined: **NE:** St. Blaise, Les Riedes, 470 m a.s.l., 1 ♂, 19.v.2001, B. Merz leg. (MHNG).

Notes: This species was described from the the Czech Republic and now it is known only from Germany, Slovakia and Sweden. The larva forms an external stem-gall with frass in large, widely-spaced grains on *Campanula rotundifolia*. New for Switzerland.

****Ophiomyia cunctata*** (Hendel, 1920)

Material examined: **ZH:** Zürich Oerlikon, 420 m a.s.l., 1 ♀, vi.-x.1987, B. Merz leg. (MHNG).

Notes: Widespread throughout much of Europe (Albania, Austria, Canary Islands, the Czech Republic, Denmark, England, Finland, France, Germany, Hungary, Italy, Lithuania, Norway, Poland, Russia, Scotland, Spain, Sweden, Turkey and the former Yugoslavia). The larva forms a whitish blotch mine along the midrib, with irregular offshoots into the leaf-blade on *Crepis*, *Hypochoeris*, *Lapsana*, *Mycelis*, *Picris*, *Sonchus* and *Taraxacum*. New for Switzerland.

Ophiomyia curvipalpis (Zetterstedt, 1848)

Reference: Martinez, 1998: 269.

Material examined: **GE:** Bernex, Signal, 510 m a.s.l., 1 ♂, 24.v.2002, B. Merz leg. (MHNG); Corsier-Port, 1 ♀, 16.-31.viii.2003, C. Besuchet leg. (MHNG). **TI:** Biasca Loderio, 300 m a.s.l., 1 ♂, 5.vii.1991, B. Merz leg. (MHNG). **VS:** Leuk Pfywald, 680 m a.s.l., 1 ♀, 7.vi.2001, B. Merz & Landry leg. (MHNG); Leuk Platten, 625 m a.s.l., 1 ♂, 2.v.1999, B. Merz leg. (MHNG); St. German, Brücke, 624 m a.s.l., 1 ♂, 3.viii.1998, B. Merz & G. Bächli leg. (MHNG).

Notes: This species is distributed chiefly in the West Palaearctic but it is also known from Japan. The larva forms a narrow, inconspicuous stem-mine on *Achillea millefolium*, *A. ptarmica*, *Anthemis tinctoria*, *Artemisia vulgaris*, *Matricaria inodora*, and possibly also on *Medicago sativa*.

****Ophiomyia galii*** Hering, 1937

Material examined: **VS:** Visperterminen, Kreuz, 1400 m a.s.l., 1 ♂, 3.vi.2003, B. Merz leg. (MHNG).

Notes: The species was recorded from Corsica, the Czech Republic, England, France, Germany, Lithuania, Poland, Slovakia, and Spain. *O. galii* was described from Germany, and the type series was reared from *Galium mollugo*. The larva forms an external stem mine, with frass in large, widely spaced grains. According to Pakalniškis (1998b) it may also attack *G. verum*. New for Switzerland.

****Ophiomyia inaequalis*** (Hendel, 1931)

Material examined: **VS:** Leuk Pfywald, 600 m a.s.l., 1 ♂, 2.vii.2001, B. Merz leg. (MHNG).

Notes: This Mediterranean species was described from a single male originating from Turkey; later it was also recorded from the Czech Republic. Our record represents the westernmost boundary of the distribution area in Europe. Its biology is unknown. New for Switzerland.

Ophiomyia nasuta (Melander, 1913)

Reference: Martinez, 1998: 269.

Material examined: **SH,** Merishausen, Ladel, 600 m a.s.l., 1 ♂, 28.iii.1992, B. Merz leg. (MHNG).

Notes: This species occurs in the Holarctic Region. It is known especially from temperate and northern Europe, North America (Canada, United States) and Japan. Its only known host plant genus is *Taraxacum* sp.

Ophiomyia orbiculata (Hendel, 1931)

References: Spencer, 1964: 800; Martinez, 1998: 269.

Material examined: **GE:** Bernex, Signal, 510 m a.s.l., 1 ♂, 24.v.2002, B. Merz leg. (MHNG). **NE:** St. Blaise Les Riedes, 470 m a.s.l., 2 ♂♂, 19.v.2001, B. Merz leg. (MHNG). **VS:** Leuk Pfywald, 600-650 m a.s.l., 1 ♂, 15.v.1996, B. Merz & G. Bächli leg. (MHNG); Leuk Platten, 630 m a.s.l., 1 ♂, 22.iv.1998, B. Merz & Botta leg. (MHNG).

Notes: The species was described from Austria based on two males and its distribution area includes mainly temperate and northern Europe. In the Mediterranean area it is known only from the former Yugoslavia and Turkey. The larva feeds as a stem-miner on *Pisum sativum*, and probably also on *Vicia*.

Ophiomyia pinguis (Fallén, 1820)

References: Spencer, 1973: 140; Martinez, 1998: 269.

Material examined: **GR:** Valbella Casoja, 1500 m a.s.l., 1 ♂, 19.vii.1997, B. Merz leg. (MHNG). **VS:** Saas-Fee, 2300 m a.s.l., 1 ♂, 1 ♀, 19.vii.1965, 1800 m a.s.l., 1 ♀, 21.vii.1965, O. Lomholdt leg. (ZMUC).

Notes: *O. pinguis* is known to occur in the Palaearctic Region. The species is recorded from European countries including the Mediterranean area (Italy, Spain and the former Yugoslavia). It is also confirmed from Egypt and Turkey and penetrates through Tajikistan and Uzbekistan to China. The natural hosts of this species are *Cichorium intybus*, *C. endivia*, *Lactuca sativa* and *Leontodon*.

**Ophiomyia submaura* Hering, 1926

Material examined: **GR:** Ardez, Bahnhof, 1350 m a.s.l., 1 ♂, 6.viii.1996, B. Merz & G. Bächli leg. (MHNG).

Notes: *O. submaura* occurs in the West Palaearctic. It is confirmed from the Czech Republic, Germany, Hungary, Lithuania, Poland, Spain and Turkey. Pakalniškis (1996) reared it from *Medicago falcata* at borders of mixed forests and in brighter pine woods. New for Switzerland.

**Ophiomyia vimmeri* Černý, 1994

Material examined: **GR:** Valbella, Casoja, 1500 m a.s.l., 1 ♂, 14.vii.1998, B. Merz leg. (MHNG).

Notes: *O. vimmeri* was described from the Czech Republic, it is also known to occur in Slovakia. Its biology is unknown. New for Switzerland.

Subfamily PHYTOMYZINAE

**Amauromyza (Cephalomyza) flavifrons* (Meigen, 1830)

Material examined: **SH:** Rüdlingen, 370 m a.s.l., 1 ♂, 7.ix.1996, B. Merz leg. (MHNG). **TI:** Gordola, Bolle, 220 m a.s.l., 1 ♂, 1.viii.1993, B. Merz & M. - Eggenberger leg. (MHNG). **ZH:** Zürich Oerlikon, 430 m a.s.l., 1 ♂, 23.v.1992, B. Merz leg. (MHNG).

Notes: This Holarctic species is distributed in Alabania, Austria, Belgium, Corsica, the Czech Republic, Denmark, England, Finland, France, Germany, Hungary, Kyrgyzstan, Lithuania, the Netherlands, Norway, Poland, Romania, Sardinia, Scotland, Spain, Sweden, Turkey and North America (Canada and United States). The larva

forms a white linear-blotch mine on many genera of Caryophyllaceae, particularly on *Dianthus*, *Lachnis*, *Melandrium*, *Saponaria*, *Silene*, *Stellaria* but also on *Beta vulgaris* and *Spinacia oleracea* (Chenopodiaceae). New for Switzerland.

****Amauromyza (Cephalomyza) mihalyii*** Spencer, 1971

Material examined: NE: St. Blaise, Les Riedes, 470 m a.s.l., 2 ♂♂, 19.v.2001, B. Merz leg. (MHNG).

Notes: This species was described from Hungary and later recorded from the Czech Republic. This record is a further evidence of *A. (C.) mihalyii* in Central Europe and represents the westernmost boundary of its occurrence. Its biology is unknown. New for Switzerland.

Amauromyza (Cephalomyza) monfalconensis (Strobl, 1909)

References: Spencer, 1992: 142; Martinez, 1998: 269.

Material examined: GR: Lenzerheide Sundroina, 1600 m a.s.l., 1 ♂, 16.vii.2000, B. Merz leg. (MHNG).

Notes: This species is distributed especially in temperate Europe. It is also recorded from Scandinavia (Sweden) and some countries of the Mediterranean area (Italy and Spain). Host plants and immature stages unknown; larva almost certainly feeds as internal stem-borer.

****Aulagromyza luteoscutellata*** (de Meijere, 1924)

Material examined: VS: Leuk Pfynwald, 600 m a.s.l., 1 ♂, 25.viii.2001, B. Merz & Landry leg. (MHNG).

Notes: The species is distributed in temperate and northern Europe (Belgium, the Czech Republic, Denmark, Finland, France, Germany, Lithuania, the Netherlands, Norway, Poland, Sweden) and Canada. It has not been recorded from the Mediterranean area, but it is known from India. The larva forms a short, funnel-shaped leaf mine, filled centrally with dark-green frass on *Lonicera* and *Symphoricarpos*. New for Switzerland.

****Aulagromyza orphana*** (Hendel, 1920)

Material examined: ZH: Zürich Katensee, 440 m a.s.l., 1 ♂, 25.v.1999, B. Merz leg. (MHNG).

Notes: Locally distributed particularly in Central Europe. Its occurrence is confirmed for Austria, Belgium, the Czech Republic, Denmark, England, France, Germany, Hungary, the Netherlands, Poland, Scotland, Slovakia, Spain and Turkey. The larva forms an external stem mine on *Galium aparine*, probably also on *G. palustre*. New for Switzerland.

****Aulagromyza similis*** (Brischke, 1880)

Material examined: SH: Merishausen, 550 m a.s.l., 1 ♀, 26.iv.1990, B. Merz leg. (MHNG).

Notes: A European species occurring in Austria, the Czech Republic, England, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, Norway, Poland, Romania, Sweden and Wales. The larva forms a large whitish linear blotch leaf mine,

frequently associated with the midrib on *Knautia arvensis* and *Succisa pratensis*. New for Switzerland.

Aulagromyza trivittata (Loew, 1873)

Reference: Martinez, 1998: 270.

Material examined: **ZH:** Zürich Albisgütli, 490 m a.s.l., 1 ♂, 9.iv.1997, B. Merz leg. (MHNG).

Notes: This species is distributed mainly in temperate Europe. In Scandinavia it is recorded from Norway and Sweden. It is not known from the Mediterranean area. The larva feeds as internal stem borer on *Galium mollugo*.

Calycomyza humeralis (von Roser, 1840)

Reference: Martinez, 1998: 270.

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 3 ♂♂, viii.2000, pasture, MT, B. Merz leg. (CMB). **VS:** Leuk Platten, 630 m a.s.l., 1 ♂, 22.iv.1998, B. Merz & Botta leg. (MHNG); Visperterminen Giw-Gebidemsee, 1900-2200 m a.s.l., 1 ♂, 28.viii.2001, B. Merz & Landry leg. (MHNG).

Notes: A semicosmopolitan species which is locally distributed in Europe but also known from East Palaearctic, North and South America, the Afrotropical and the Oriental Regions, Australia and the Hawaiian Islands. The larva forms a leaf mine on *Aster*, *Bellis* and *Erigeron*.

****Cerodontha (Butomomyza) angulata*** (Loew, 1869)

Material examined: **ZH:** Zürich Zürichberg, 500-600 m a.s.l., 3 ♂♂, 16.viii.1992, B. Merz leg. (MHNG).

Notes: The species is distributed in the Holarctic Region including Japan and Kuril Islands. The larva forms a long greenish leaf mine on *Carex*, rarely on *Scirpus silvaticus*. New for Switzerland.

****Cerodontha (Butomomyza) rohdendorfi*** Nowakowski, 1967

Material examined: **ZH:** Embrach, Haumüli, 400 m a.s.l., 1 ♂, 28.v.1997, B. Merz leg. (MHNG).

Notes: Described from Poland and later recorded from the Czech Republic, Finland and Italy. The larva forms an upper or lower surface mine, filling the entire width of the leaf of *Poa chaixii*, *Festuca pratensis* and probably other related grasses. New for Switzerland.

Cerodontha (Cerodontha) affinis (Fallén, 1823)

References: Spencer, 1976: 177; Martinez, 1998: 270.

Material examined: **ZH:** Horgen, 550 m a.s.l., 1 ♂, 24.v.1989, B. Merz leg. (MHNG).

Notes: The species is common in Europe, particularly in the temperate zone. Its biology is unknown.

Cerodontha (Cerodontha) denticornis (Panzer, 1806)

Reference: Martinez, 1998: 270.

Material examined: **GR:** Lenzerheide, 1600 m a.s.l., 1 ♀, 8.x.1991, B. Merz & M. Eggenberger leg. (MHNG); Lenzerheide, 2000 m a.s.l., 1 ♂, 23.viii.-9.ix.2000,

pasture, MT, B. Merz leg. (CMB). **SH**: Merishausen, Gräte, 520 m a.s.l., 1 ♂, 1.vi.1996, B. Merz & M. Eggenberger leg. (MHNG). **VS**: Saas-Fee, 1800 m a.s.l., 1 ♂, 3 ♀♀, 21.vii.1965, O. Lomholdt leg. (ZMUC). **TI**: Lavertezzo, 560 m a.s.l., 1 ♀, 12.ix.1989, B. Merz leg. (MHNG). **ZH**: Zürich Allmend, 460 m a.s.l., 2 ♂♂, 17.v.1995; Zürich Irchel, 500 m a.s.l., 1 ♂, 24.v.1996; Zürich Katzenssee, 440 m a.s.l., 1 ♂, 25.v.1996, B. Merz leg. (MHNG).

Notes: A common Palaearctic species described from Germany. Known to occur also in the Afrotropical and Oriental Regions including Taiwan. The larva feeds mainly in the leaf sheath of Gramineae.

Cerodontha (Cerodontha) fulvipes (Meigen, 1830)

References: Spencer, 1976: 177, 180; Martinez, 1998: 270.

Material examined: **GL**: Pragelpass, 1500 m a.s.l., 1 ♂, 5.viii.1991, G. Bächli, Beuk & B. Merz leg. (MHNG). **GR**: Lenzerheide, 2000 m a.s.l., 1 ♂, viii.2000, pasture, MT, B. Merz leg. (CMB). **TI**: Gordola, Bolle d. M., 205 m a.s.l., 2 ♂♂, 6.vii.2001, B. Merz leg. (MHNG). **VS**: Baltschieder, Rotten-Ufer, 650 m a.s.l., 1 ♂, 19.v.1996, B. Merz leg. (MHNG); Saas-Fee, 2000 m a.s.l., 1 ♂, 1 ♀, 18.vii.1965, 2300 m a.s.l., 2 ♀♀, 19.vii.1965, 1800 m a.s.l., 1 ♀, 21.vii.1965, O. Lomholdt leg. (ZMUC). **ZH**: Embrach Haumüli, 400 m a.s.l., 3 ♂♂, 24.vi.1995, 1 ♂, 19.vi.1998, Zürcher leg. (MHNG); Zürich Irchel, 500 m a.s.l., 1 ♂, 16.viii.1998, B. Merz leg. (MHNG).

Notes: A Palaearctic species which is generally distributed in Europe and recorded also from China. *Poa trivialis* is known as a host plant but the larva feeds probably on other grasses as well.

****Cerodontha (Cerodontha) unguicornis*** Hendel, 1932

Material examined: **GR**: Lenzerheide, 2000 m a.s.l., 1 ♂, 23.-31.viii.2000, pasture, MT, B. Merz leg. (CMB); Valbella, Casoja, 1600 m a.s.l., 1 ♀, 18.vii.2000, B. Merz leg. (MHNG). **VS**: Saas-Fee, 1800 m a.s.l., 1 ♂, 21.vii.1965, O. Lomholdt leg. (ZMUC).

Notes: The species was described from Central Europe. It is known from Austria, the Czech Republic and Germany. Its biology is still unknown. New for Switzerland.

****Cerodontha (Dizygomyza) bimaculata*** (Meigen, 1830)

Material examined: **BE**: Tramelan, La Tourbière, 995 m a.s.l., 1 ♂, 4.vi.2003, Merz, Haenni & Rapp leg. (MHNG). **GR**: S. Vittore, Rebberg, 300 m a.s.l., 1 ♂, 4.viii.1997, B. Merz leg. (MHNG). **TI**: Biasca, 350 m a.s.l., 1 ♂, 18.v.1991, B. Merz leg. (MHNG); Mte. Caslano, 400 m a.s.l., 1 ♂, 20.v.1991, B. Merz leg. (MHNG). **VS**: Morgins, Portes du Soleil (Monthey), 1700-1950 m a.s.l., 1 ♂, 22.vi.2003, B. Merz leg. (MHNG).

Notes: This species is common in Europe. It is also known from the Kuril Islands and Japan. The larva forms a narrow mine on *Luzula*, particularly on *L. pilosa*. New for Switzerland.

****Cerodontha (Dizygomyza) crassiseta*** (Strobl, 1900)

Material examined: **GR**: Lenzerheide, 2000 m a.s.l., 1 ♂, viii.2000, pasture, MT, B. Merz leg. (CMB).

Notes: A European species which is distributed especially in temperate Europe. In Fennoscandia known only from Sweden, and in the Mediterranean area recorded only from Italy and Spain. *Dactylis glomerata* and *Poa compressa* are known as host plants of this species. New for Switzerland.

****Cerodontha (Dizygomyza) fasciata* (Strobl, 1880)**

Material examined: VS: Leuk Pfynwald, 630 m a.s.l., 1 ♂, 21.iv.1998, B. Merz & Botta leg. (MHNG); Visperterminen Dorf, 1400 m a.s.l., 1 ♂, 26.viii.2001, B. Merz & Landry leg. (MHNG).

Notes: A species with a Holarctic type of distribution, known from temperate and northern Europe. It has not been recorded from the Mediterranean area. In North America occurring in Canada and the United States. Its biology is unknown. New for Switzerland.

****Cerodontha (Dizygomyza) griffithsi* Nowakowski, 1967**

Material examined: VS: Saas-Fee, 2000 m a.s.l., 1 ♂, 22.vii.1965, 1 ♂, 27.vii.1965, O. Lomholdt leg. (ZMUC).

Notes: This species was described from one male originating from the Austrian Alps. Later it was found in France. Its discovery in the Swiss Alps is thus not surprising. Recently it was captured in the High Tatra Mts in Slovakia (Černý & Vála, 2005). Its biology is unknown. New for Switzerland.

****Cerodontha (Dizygomyza) luctuosa* (Meigen, 1830)**

Material examined: GR: Zernez, Gondas, 1480 m a.s.l., 1 ♂, 4.viii.1996, B. Merz & G. Bächli leg. (MHNG).

Notes: The species occurs in the Holarctic Region. It is known particularly from Europe, but also from Tunisia, China, Japan and North America (Canada, United States, incl. Alaska). The larva feeds on *Juncus effusus*. New for Switzerland.

****Cerodontha (Dizygomyza) luzulae* (Groschke, 1957)**

Material examined: ZH: Zürich Albisgütli, 450 m a.s.l., 1 ♂, 1.v.1995, B. Merz leg. (MHNG).

Notes: This European species was recorded from some Central European countries (the Czech Republic, Germany, Hungary and Poland) and the British Isles. *Luzula sylvatica* is the only known host plant of *C. (D.) luzulae*. New for Switzerland.

***Cerodontha (Dizygomyza) morosa* (Meigen, 1830)**

References: Hendel, 1931-6: 92; Martinez, 1998: 270.

Material examined: GR: S. Vittore Rebberg, 300 m a.s.l., 1 ♂, 4.viii.1997, B. Merz leg. (MHNG).

Notes: This Holarctic species is common in Europe and known to occur also in the East Palaearctic (China and Japan) and the Oriental Regions (Philippines). The larva forms a relatively short and broad mine, which not extends to the leaf base of *Carex*.

****Cerodontha (Dizygomyza) spinata* (Groschke, 1954)**

Material examined: VS: Visperterminen Rothorn, 2250 m a.s.l., 2 ♂♂, 26.viii.2001, B. Merz & Landry leg. (MHNG).

Notes: The species is known from Austria, the British Isles, the Czech Republic, Germany and Poland. The larva feeds on *Carex sylvatica* and *C. pilosa*. New for Switzerland.

****Cerodontha (Poemyza) alpina*** Nowakowski, 1967

Material examined: **GR:** Lenzerheide, St. Cassian, 1450 m a.s.l., 1 ♂, 12.vii.1998, B. Merz leg. (MHNG).

Notes: This mountain species was described from the upper forest zone of the East Carpathians (Poland) and later it was found in Austria. Our record of *C. (P.) alpina* in the Swiss Alps could be expected. The larva forms a leaf mine on *Poa alpina* and *Trisetum alpestre*. New for Switzerland.

Cerodontha (Poemyza) atra (Meigen, 1830)

References: Hendel, 1931-6: 38; Nowakowski, 1973: 91; Martinez, 1998: 270.

Material examined: **GE:** Bernex, Signal, 510 m a.s.l., 1 ♂, 24.v.2002, B. Merz leg. (MHNG).

Notes: This species is common in Europe and known to occur in Japan. Some species of Gramineae are host plants of this species, in particular *Calamagrostis epigeios* and *Agrostis alba*.

****Cerodontha (Poemyza) beigeriae*** Nowakowski, 1973

Material examined: **GE:** Russin, Les Baillelets, 405 m a.s.l., 1 ♂, 30.vi.2001, B. Merz leg. (MHNG).

Notes: Originally known only from Central Europe (the Czech Republic, Germany, Hungary and Poland). Recently Zlobin (1986, 1992) recorded *C. (P.) beigeriae* also from East Siberia and the Far East. The larva feeds on *Calamagrostis canescens*, *C. arundinacea*, *C. villosa* and *Agrostis canina*. New for Switzerland.

****Cerodontha (Poemyza) calamagrostidis*** Nowakowski, 1967

Material examined: **GE:** Bernex, Chante-Merle, 415 m a.s.l., 1 ♂, 20.v.2002, B. Merz leg. (MHNG).

Notes: This Holarctic species is distributed in Europe but it has not been found in the Mediterranean area. In North America known from Canada. *Calamagrostis* sp. and *Alopecurus pratensis* are the known host plants. New for Switzerland.

****Cerodontha (Poemyza) incisa*** (Meigen, 1830)

Material examined: **ZH:** Zürich Zürichberg, 450-650 m a.s.l., 1 ♂, 20.viii.1992, B. Merz leg. (MHNG).

Notes: This Holarctic species is common in Europe but also known from China, Pakistan, Japan and North America. The larva forms a leaf mine on Gramineae, most commonly on *Agropyron*, *Calamagrostis*, *Festuca* and *Phalaris* but Nowakowski (1973) recorded 17 additional European genera. New for Switzerland.

****Cerodontha (Poemyza) lateralis*** (Macquart, 1835)

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 1 ♂, 23.-31.viii.2000, pasture, MT, B. Merz leg. (CMB). **VS:** Branson, Follatères, 450-950 m a.s.l., 1 ♂. 29.iii.2002; Leuk Pfywald, 630 m a.s.l., 1 ♂, 25.v.1997, 600 m a.s.l., 1 ♂, 2.vii.2001. All B. Merz leg. (MHNG).

Notes: This Palaearctic species is common in the whole of West Palaearctic and penetrates to North Africa (Tunisia), Turkey, China and Japan. The larva forms a linear mine running towards the apex of the leaf and this can widen and become almost blotch-like on Gramineae. New for Switzerland.

****Cerodontha (Poemyza) lyneborgi* Spencer, 1972**

Material examined: **GE:** Chancy, La Laire, 350 m a.s.l., 1 ♂, 24.iv.2003, B. Merz & F. Amiet leg. (MHNG); Russin, Les Baillets, 405 m a.s.l., 1 ♂, 30.vi.2001, B. Merz leg. (MHNG).

Notes: This species was described by Spencer (1972a) from Spain and later on it was found in other countries of Europe (the Czech Republic, Hungary, Italy, Lithuania and Russia). Its biology is unknown. New for Switzerland.

***Cerodontha (Poemyza) muscina* (Meigen, 1830)**

Reference: Martinez, 1998: 270.

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 2 ♂♂, viii.2000, pasture, MT, B. Merz leg. (CMB); Lenzerheide, gegen Sanaspans, 1500 m a.s.l., 1 ♂, 7.viii.1992, B. Merz leg. (MHNG). **VS:** Visperterminen Dorf, 1400 m a.s.l., 1 ♂, 26.viii.2001, B. Merz & Landry leg. (MHNG). **ZH:** Zürich Katzenssee, 450 m a.s.l., 1 ♂, 1.viii.1995; Zürich Ziegelhütte, 460 m a.s.l., 1 ♂, 29.vi.1997, B. Merz leg. (MHNG).

Notes: This Holarctic species is common in Europe including the Mediterranean area (Spain, Italy and Slovenia), but also in North America. The larva forms a leaf mine on Gramineae. Mines were recorded on *Dactylis*, *Festuca*, *Holcus*, *Milium* and *Poa*.

****Cerodontha (Poemyza) pygmaea* (Meigen, 1830)**

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 1 ♂, 23.-31.viii.2000, pasture, MT, B. Merz leg. (CMB). **TI:** Biasca, Loderio, 350 m a.s.l., 1 ♂, 26.iii.1998, B. Merz leg. (MHNG).

Notes: This species from the *incisa*-group shows a Holarctic type of distribution and it is well known from a greater part of Europe. The larva forms a leaf mine on Gramineae. New for Switzerland.

****Cerodontha (Poemyza) spencerae* Zlobin, 1993**

Material examined: **BE:** Berner Alpen, Grindelwald env., 2500 m a.s.l., 4 ♂♂, 16.vi.1997, B. Mocek leg. (CBM).

Notes: This Holarctic species is based on the type series originating from Russia, Estonia and Kazakhstan. In the Palaearctic Region *C. (P.) spencerae* was recorded from the British Isles, the Czech Republic, Finland, Italy, Latvia, Lithuania, Slovakia, East Siberia and the Russian Far East incl. Sakhalin. In Europe it was once bred from *Agropyron repens*. New for Switzerland.

****Cerodontha (Xenophytomyza) atronitens* (Hendel, 1920)**

Material examined: **VS:** Leuk Pfywald, 600-650 m a.s.l., 1 ♂, 19.v.1996, B. Merz & G. Bächli leg. (MHNG).

Notes: This species is distributed in temperate and northern Europe, but not yet found in the Mediterranean area. Host plants are unknown but certainly it is an internal feeder in the leaf-sheath or stem of Gramineae. New for Switzerland.

***Cerodontha (Xenophytomyza) biseta* (Hendel, 1920)**

Reference: Martinez, 1998: 270.

Material examined: **GE:** Cartigny, Moulin de Vert, 350 m a.s.l., 1 ♂, 9.vii.2001, B. Merz leg. (MHNG). **VS:** Leuk Pfynwald, 600 m a.s.l., 1 ♂, 6.vi.2001, 1 ♂, 7.vi.2001, B. Merz & Landry leg. (MHNG). **ZH:** Zürich Hönggerberg, 530 m a.s.l., 1 ♂, 9.vi.1998; Zürich Waldgarten, 460 m a.s.l., 1 ♂, 7.vi.1997; Zürich Ziegelhütte, 460 m a.s.l., 2 ♂♂, 29.vi.1997, B. Merz leg. (MHNG).

Notes: *C. (X.) biseta* shows a Holarctic distribution and it is known to occur particularly in Europe including the Mediterranean area but also in Japan and North America (Canada and United States). The single specimen of *C. (X.) biseta* collected from the Jamaican Blue Mountains represents the first Neotropical record (Boucher, 2003). Host plants unknown, certainly an internal feeder in Gramineae.

****Chromatomyia fuscula* (Zetterstedt, 1838)**

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., pasture, 1 ♂, 23.-31.viii.2000, MT, B. Merz leg. (CMB). **SZ:** Unteriberg, O. Weid, 1600 m a.s.l., 1 ♂, 24.vii.2001. **TI:** Biasca, Loderio, 350 m a.s.l., 1 ♂, 15.iii.1994, 1 ♂, 23.iii.1996, 1 ♂, 26.iii.1998. **VS:** Branson, Follatères, 450-950 m a.s.l., 2 ♂♂, 29.iii.2002, B. Merz leg. (MHNG); Leuk Pfynwald, 600 m a.s.l., 1 ♂, 6.vi.2001, B. Merz & Landry leg. (MHNG); Visperterminen Dorf, 1550 m a.s.l., 1 ♂, 27.viii.2001, B. Merz & Landry leg. (MHNG).

Notes: *Ch. fuscula* has a Holarctic distribution. In Europe this species is known to occur chiefly in temperate and northern parts. Also recorded in the East Palaearctic: Russia (Asian part), Kamchatka and Japan. The larva forms leaf-mines on Gramineae. New for Switzerland.

***Chromatomyia gentianella* (Hendel, 1932)**

References: Hendel, 1931-6: 311; Spencer, 1990: 396; Martinez, 1998: 270.

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 2 ♂♂, 21-31.viii.2000, pasture, MT, B. Merz leg. (CMB).

Notes: This mountain species is only known from Central Europe (Austria, North Italy, Poland and Switzerland). Larva forms a linear mine on *Gentiana*.

***Chromatomyia hoppiella* Spencer, 1990**

References: Spencer, 1990: 396; Martinez, 1998: 270.

Material examined: **GR:** Ausserferrera, 1300 m a.s.l., 1 ♂, 15.viii.1991, B. Merz & A. Freidberg leg. (MHNG); Lenzerheide, 2000 m a.s.l., 1 ♂, viii.2000, pasture, MT, B. Merz leg. (CMB); Valbella Casoja, 1500 m a.s.l., 1 ♂, 19.vii.2000, B. Merz leg. (MHNG).

Notes: *Ch. hoppiella* was described recently from Switzerland (Lenzerheide), based on the male holotype which was bred from *Gentiana excisa*. Our records represents the first additional faunistic data after the description.

Chromatomyia horticola (Goureau, 1851)

Reference: Martinez, 1998: 270.

Material examined: **VS:** Branson Follatères, 450-950 m a.s.l., 1 ♂, 29.iii.2002, B. Merz leg. (MHNG). **ZH:** Zürich Oerlikon, 430 m a.s.l., 1 ♀, 23.v.1992, leaf mine ex *Centaurea* sp., B. Merz leg. (MHNG).

Notes: A polyphagous species, common in the Palaearctic, Afrotropical and Oriental Regions. *Ch. horticola* is a well known and common species mining a large spectrum of host plants, Griffiths (1967) and Spencer (1973) recorded host plants belonging to 34 families. The larva forms a long whitish upper surface corridor, which may go to the lower surface.

****Chromatomyia isicae*** (Hering, 1962)

Material examined: **TI:** Biasca, Loderio, 300 m a.s.l., 1 ♂, 9.iv.1995, B. Merz leg. (MHNG).

Notes: This species was described from Austria. It is also recorded from the Czech Republic, Finland, Germany, Ireland, Lithuania, Norway and Sweden. Its biology is unknown. New for Switzerland.

Chromatomyia milii (Kaltenbach, 1864)

Reference: Martinez, 1998: 270.

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 1 ♂, viii.2000, pasture, MT, B. Merz leg. (CMB); Valbella Casoja, 1550 m a.s.l., 1 ♂, 13.vii.1996, 1 ♂, 15.vii.1996, B. Merz leg. (MHNG). **TI:** A. d'Arena, 1700 m a.s.l., 1 ♂, 20.vii.1983, C. Besuchet leg. (MHNG); Biasca Loderio, 350 m a.s.l., 1 ♂, 23.iii.1996, 300 m a.s.l., 1 ♂, 9.iv.1995, B. Merz leg. (MHNG); Gordola, Bolle d. M., 205 m a.s.l., 1 ♂, 6.vii.2001, B. Merz leg. (MHNG). **ZH:** Embrach Haumüli, 430 m a.s.l., 1 ♂, 3.vii.1996, B. Merz leg. (MHNG); Zürich Albisgütli, 450 m a.s.l., 1 ♂, 27.iii.1994, 500 m a.s.l., 1 ♂, 2.iv.1997, B. Merz leg. (MHNG); Zürich Allmend, 450 m a.s.l., 2 ♂♂, 30.iii.1994, B. Merz leg. (MHNG); Zürich Katzenssee, 440 m a.s.l., 1 ♂, 19.iv.1997, B. Merz leg. (MHNG); Zürich, 1 ♂, 26.vii.1987, B. Merz leg. (MHNG).

Notes: A Holarctic species which is common in the West Palaearctic and in North America (Canada) but it is also recorded from India. This species feeds in the larval stage on a variety of soft-leaved wild grasses in mesic and woodland habitats. It is not a pest of cultivated cereals, and large marsh grasses, such as *Phragmites*; *Phalaris* and *Glyceria* are also apparently avoided.

Chromatomyia nigra (Meigen, 1830)

Reference: Martinez, 1998: 270.

Material examined: **GR:** Lenzerheide Sundroina, 1550 m a.s.l., 1 ♂, 18.vii.1997, B. Merz leg. (MHNG). **SG:** Chäserrugg, 1850 m a.s.l., 1 ♂, 15.viii.1997, B. Merz leg. (MHNG).

Notes: A Holarctic species. Its distribution area in the Palaearctic and Nearctic Regions seems to be larger than in the related *Ch. milii*. It was also recorded in the Oriental Region. The larva forms a narrow, whitish linear mine on many genera of Gramineae.

****Chromatomyia opacella*** (Hendel, 1935)

Material examined: **GR:** Lenzerheide, Sanaspans, 2150 m a.s.l., 1 ♂, 14.vii.1996, B. Merz leg. (MHNG).

Notes: This mountain species is distributed up to the subalpine and alpine zones of the Polish Tatra Mts. It penetrates far to the North (Iceland and Faroes Islands). Recently recorded from Central Europe (Černý & Vála, 2005), known also from the British Isles and North Italy. One record from Greenland is mentioned by Griffiths (1980). Immature stages and the mine are unknown. *Sesleria tatrae* and *Trisetum fuscum* are recorded as host plants. Our record extends its range of alpine localities from Austria and Italy to Switzerland. New for Switzerland.

****Chromatomyia pseudomilii*** Griffiths, 1980

Material examined: **VS:** Visperterminen Dorf, 1550 m a.s.l., 1 ♂, 27.viii.2001, B. Merz & Landry leg. (MHNG).

Notes: This mountain species was described from Germany; it is also known from mountains of the Czech Republic (Černý & Vála, 1996), from the High Tatra Mts in Slovakia (Černý & Vála, 2005) as well as from North America (United States and Alaska). Its occurrence in further European mountains is very likely. The larva forms leaf mines on Gramineae and *Carex*. New for Switzerland.

Chromatomyia ramosa (Hendel, 1923)

References: Spencer, 1992: 142; Martinez, 1998: 270.

Material examined: **JU:** Alle, 450 m a.s.l., 1 ♂, 6.ix.1989, B. Merz leg. (MHNG). **ZH:** Volketswil, Homberg, 500 m a.s.l., 1 ♂, 7.vi.1995, B. Merz leg. (MHNG).

Notes: A common species in Europe which was also recorded from China. The larva feeds primarily along midrib, forming short offshoots into the leaf-blade in *Dipsacus*, *Knautia* and *Succisa*.

****Galiomyza galiivora*** (Spencer, 1969)

Material examined: **GE:** Jussy, Prés-de-Villette, 475 m a.s.l., 1 ♂, 2.viii.2002, B. Merz leg. (MHNG).

Notes: *G. galiivora* was described by Spencer (1969) from specimens bred from *Galium* in the United States. It is also recorded in Canada and Europe (Belgium, Corsica, the Czech Republic, Germany, Lithuania, Poland and Slovakia). New for Switzerland.

Galiomyza morio (Brischke, 1880)

Reference: Martinez, 1998: 270.

Material examined: **NE:** St. Blaise Les Riedes, 470 m a.s.l., 1 ♂, 19.v.2001, B. Merz leg. (MHNG).

Notes: Also this species is mining *Galium*, but it was also bred from *Asperula odorata* (= *Galium odoratum*). Its distribution area includes Europe and Japan. The larva forms a narrow linear mine which may largely fill small leaves and produce a secondary blotch.

****Liriomyza approximata*** (Hendel, 1920)

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 1 ♂, 21-31.viii.2000, pasture, MT, B. Merz leg. (CMB).

Notes: This species of mixed forests is known from Central and Northern Europe where it was found in Austria, Finland, Germany, Hungary, Northern Italy and Poland. The larva forms an upper surface blotch mine on *Daphne mezereum*. New for Switzerland.

Liriomyza congesta (Becker, 1903)

Reference: Martinez, 1998: 270.

Material examined: **SH:** Merischausen, Ladel, 700 m a.s.l., 1 ♂, 13.v.1991, B. Merz leg. (MHNG). **ZH:** Zürich Katzenssee, 440 m a.s.l., 1 ♂, 25.v.1996, B. Merz leg. (MHNG).

Notes: Generally distributed in the West Palaearctic but apparently ranging to Japan. Common in the Mediterranean area (Albania, Corsica, Egypt, Italy incl. Sardinia, Maltese Islands, Spain and Turkey). The larva forms an upper surface linear mine exclusively on Leguminosae, with many genera being attacked, in particular *Medicago*, *Lathyrus*, *Pisum* and *Vicia*.

****Liriomyza erucifolii*** de Meijere, 1944

Material examined: **TI:** Biasca, Loderio, 300 m a.s.l., 1 ♂, 9.iv.1995, B. Merz leg. (MHNG).

Notes: This species is based on the male holotype from France and later recorded from the Czech Republic, Denmark, England, the Netherlands and Poland. Recently found on the Maltese Islands (Černý, 2005b). The larva forms a relatively long linear mine, normally beginning near the apex of the leaf on *Senecio erucifolius* and *S. jacobaea*. New for Switzerland.

Liriomyza flaveola (Fallén, 1823)

Reference: Martinez, 1998: 271.

Material examined: **GE:** Chancy, La Laire, 350 m a.s.l., 2 ♂♂, 24.iv.2003, B. Merz & F. Amiet leg. (MHNG). **ZH:** Zürich, 600 m a.s.l., 1 ♂, 10.vi.1991, B. Merz leg. (MHNG).

Notes: A common European species but known to occur also in Turkey, eastern Russia (East Siberia, Far East, Kamchatka, Kuril Islands), Uzbekistan, Japan and India. The larva forms a narrow, whitish leaf mine on Gramineae, occurring on many genera, particularly *Bromus*, *Dactylis*, *Holcus* and *Poa*, also on cultivated *Avena sativa* and *Hordeum vulgare*.

****Liriomyza lutea*** (Meigen, 1830)

Material examined: **VS:** Visperterminen, 1460 m a.s.l., 1 ♂, 23.vii.1992, B. Merz leg. (MHNG).

Notes: Widespread in Europe but local, frequently occurring in large numbers in association with the food-plants. The larva feeds in individual seeds on *Angelica sylvestris*, *Heracleum sphondylium* and *Pastinaca sativa*, probably also on *Laserpitium*. New for Switzerland.

****Liriomyza obliqua*** Hendel, 1931

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 1 ♂, 21-31.viii.2000, pasture, MT, B. Merz leg. (CMB).

Notes: *L. obliqua* is distributed in temperate Europe and in the Mediterranean area (Austria, Bulgaria, Germany, Lithuania, Romania, Slovakia, former Yugoslavia and Ukraine). Its biology is unknown. New for Switzerland.

Liriomyza polygalae Hering, 1927

Reference: Martinez, 1998: 271.

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 2 ♂♂, viii.2000, pasture, MT, B. Merz leg. (CMB).

Notes: The species was described by Hering (1927) from Lugano (TI) in Switzerland. It is known to occur mainly in Central Europe but also in England. This is the second record from Switzerland. The larva forms an irregular linear-blotch mine on *Polygala vulgaris*.

****Liriomyza taraxaci*** Hering, 1927

Material examined: **VS:** Leuk Pfynwald, 630 m a.s.l., 2 ♂♂, 23.iv.1998, B. Merz & Botta leg. (MHNG).

Notes: A Holarctic species which is common in Europe, but known only from Slovenia and Spain in the Mediterranean area. In North America recorded from Canada and United States. The larva forms a somewhat irregular, elongate blotch leaf mine on *Taraxacum*. New for Switzerland.

****Metopomyza flavonotata*** (Haliday, 1833)

Material examined: **VS:** Leuk Platten, 625 m a.s.l., 1 ♂, 30.v.2002; Visperterminen Kreuz, 1400 m a.s.l., 1 ♂, 3.vi.2003, B. Merz leg. (MHNG).

Notes: This is a type species of the genus *Metopomyza*. It is common in Europe as well as in Russia (incl. Siberia and Far East) and Japan. Its biology is unknown, Pakalniškis (1998a) recorded *Deschampsia caespitosa* as a host plant for the first time. New for Switzerland.

****Metopomyza nigriorbita*** (Hendel, 1931)

Material examined: **GE:** Bernex, Chante-Merle, 415 m a.s.l., 1 ♂, 16.viii.2002, B. Merz leg. (MHNG).

Notes: A Palaearctic species which is common in Europe but not known in southern parts. Recorded also from Japan. The puparium is dark brown, with posterior spiracles each having a bunch of about 6 irregular bulbs (Spencer, 1976) but the host plant is unknown. New for Switzerland.

****Metopomyza scutellata*** (Fallén, 1823)

Material examined: **GE:** Jussy, Prés-de-Villette, 475 m a.s.l., 1 ♂, 2.viii.2002, B. Merz leg. (MHNG); Russin, Les Baillets, 405 m a.s.l., 1 ♂, 1.vii.2002, B. Merz & Herrmann leg. (MHNG). **VS:** Leuk Pfynwald, 630 m a.s.l., 1 ♂, 6.vi.1997, B. Merz leg. (MHNG), 625 m a.s.l., 1 ♂, 16.v.2000, B. Merz & Ulrich leg. (MHNG). **ZH:**

Zürich, 500 m a.s.l., 2 ♂♂, 10.viii.1991, B. Merz leg. (MHNG); Zürich Waldgarten, 460 m a.s.l., 1 ♂, 30.vii.1997, B. Merz leg. (MHNG).

Notes: A Palearctic species which is, in addition to Europe, also recorded from Kazakhstan, Kyrgyzstan, eastern Russia (East Siberia, Far East) and Japan. Species of *Carex* are host plants. New for Switzerland.

****Metopomyza xanthaspis* (Loew, 1858)**

Material examined: **NE:** St. Blaise, Les Riedes, 470 m a.s.l., 2 ♂♂, 19.v.2001, B. Merz leg. (MHNG). **VS:** Grächen, 1450 m a.s.l., 1 ♂, 5.vi.1987, B. Merz leg. (MHNG); Leuk Pfywald, 630 m a.s.l., 1 ♂, 6.vi.2001, B. Merz & B. Landry leg. (MHNG).

Notes: A common species in Europe, ranging to the Mediterranean area (Croatia, Spain, Tunisia), Kazakhstan, Asian Russia and Japan. The larvae feed as leaf miner on *Carex humilis*. New for Switzerland.

****Napomyza bellidis* Griffiths, 1967**

Material examined: **GE:** Chancy, La Laire, 350 m a.s.l., 1 ♂, 18.iv.2003, B. Merz leg. (MHNG).

Notes: This species is based on a type series reared from *Bellis perennis* in England and later recorded from further European countries (Austria, Belgium, England, Estonia, France, Germany, Hungary, Italy, Latvia, Lithuania, Maltese Islands, Portugal, Russia, Sweden and Ukraine) and Central and East Palearctic (Uzbekistan, Japan). New for Switzerland.

***Napomyza cichorii* Spencer, 1966**

Reference: Martinez, 1998: 271.

Material examined: **VS:** Saas-Fee, 2400 m a.s.l., 1 ♂, 22.vii.1965, O. Lomholdt leg. (ZMUC).

Notes: This species was described from a pair reared from *Cichorium intybus* originating from the Netherlands and one male from an alpine meadow in Switzerland (VS: Orsières). Our male confirms the occurrence in the canton Valais. It is distributed mainly in temperate Europe, the Mediterranean region and penetrates to Armenia, East Siberia, Far East and Japan. The larvae feed in stems and roots of *Cichorium intybus* and *C. endivia* (Asteraceae).

****Napomyza elegans* (Meigen, 1830)**

Material examined: **GR:** Valbella, 1500 m a.s.l., 1 ♀, 28.vii.1999, leg. B. Merz & Müller (MHNG).

Notes: A European species which is more common in temperate and northern Europe. Host plants and early stages are unknown but flies are not infrequently caught on flowers of *Valeriana officinalis* and it is believed the larva may feed in the root of this plant. New for Switzerland.

****Napomyza maritima* von Tschirnhaus, 1981**

Material examined: **TI:** Biasca, 350 m a.s.l., 1 ♂, 18.v.1991, B. Merz leg. (MHNG).

Notes: This species was described from Germany and France and it is also recorded from the Czech Republic, Finland, Hungary, Kazakhstan, Russia, Slovenia and Uzbekistan. The larva feeds in stems of *Artemisia maritima*. This plant does not occur in Switzerland. Other species of *Artemisia*, like *A. campestris* and *A. vulgaris*, both common in Biasca, may be infested by this species. New for Switzerland.

**Napomyza nigriceps* van der Wulp, 1871

Material examined: **GE:** Chancy, La Laire, 350 m a.s.l., 1 ♂, 1.iv.2002, 1 ♂, 18.iv.2003, B. Merz leg. (MHNG).

Notes: The species is known from Western, Central and Northern Europe, but it is not recorded in the Mediterranean area. Its biology is unknown. New for Switzerland.

**Napomyza tripolii* Spencer, 1966

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 1 ♂, 21-31.viii.2000, pasture, MT, B. Merz leg. (CMB).

Notes: The type series of this species was caught on *Aster tripolium* in England. Later records includes localities in Denmark, Germany, Ireland and Spain. The larva feeds in the stem of *Aster tripolium*. This plant does not occur in Switzerland. On the other hand, *A. alpinus* is a common plant in the collecting and may be host of *N. tripolii*. New for Switzerland.

Phytoliriomyza arctica (Lundbeck, 1901)

Reference: Martinez, 1998: 271.

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 1 ♂, viii.2000, pasture, MT, B. Merz leg. (CMB); Rothenbrunnen, 600 m a.s.l., 1 ♂, 25.xi.1992. **VS:** Baltschieder, 670 m a.s.l., 1 ♀, 12.v.1991; Branson, Follatères, 450-950 m a.s.l., 1 ♂, 29.iii.2002; Leuk Pfynwald, 650 m a.s.l., 1 ♂, 2.v.1997, B. Merz leg. (MHNG).

Notes: Almost cosmopolitan species but not known from the Afrotropical Region; common in Europe. Early stages unknown, but once reported as stem miner on *Sonchus*, probably also on other Asteraceae.

Phytoliriomyza melampyga (Loew, 1869)

Reference: Martinez, 1998: 271.

Material examined: **VS:** Leuk Pfynwald, 600 m a.s.l., 1 ♂, 25.viii.2001, B. Merz & Landry leg. (MHNG).

Notes: This Holarctic species is common in temperate and northern Europe and also recorded from North America and Oriental Region (India). The larva forms a leaf mine on *Impatiens* particularly on *I. noli-tangere* and *I. parviflora*.

**Phytoliriomyza perpusilla* (Meigen, 1830)

Material examined: **VS:** Branson, Follatères, 450-950 m a.s.l., 1 ♂, 29.iii.2002, B. Merz leg. (MHNG).

Notes: *P. perpusilla* is distributed everywhere in Europe including the Mediterranean area and penetrates to the Afrotropical Region (Cape Verde Is., Lesotho,

South Africa). Host plant unknown but probably several genera of Asteraceae (Spencer, 1976). New for Switzerland.

Phytomyza affinis Fallén, 1823

References: Hendel, 1931-6: 334; Martinez, 1998: 271.

Material examined: **GR:** Valbella Casoja, 1500 m a.s.l., 1 ♂, 19.vii.2000, B. Merz leg. (MHNG).

Notes: A species known to occur in the West Palaearctic, in particular in temperate and northern Europe but also recorded in the Mediterranean area and the Far East (Kuril Islands). The larva feeds in seed-heads on *Euphrasia*.

**Phytomyza albipennis* Fallén, 1823

Material examined: **GR:** S. Vittore, Monticello, 280 m a.s.l., 2 ♂♂, 8.iv.1997, B. Merz leg. (MHNG).

Notes: This species is recorded from Europe including the Mediterranean area (Croatia, Canary Islands, Italy, Spain and the former Yugoslavia). Host plant unknown but some specimens have been caught on *Ranunculus* and the larvae possibly feed as an internal stem-borer (Spencer, 1972b, 1990). New for Switzerland.

Phytomyza angelicae Kaltenbach, 1872

Reference: Martinez, 1998: 271.

Material examined: **JU:** Bonfol, 450 m a.s.l., 1 ♂, 30.iv.1990, B. Merz leg. (MHNG).

Notes: A Holarctic species which is known from temperate and northern Europe (not recorded from southern Europe), Kazakhstan, Turkey and North America. The larva forms an upper surface blotch leaf mine on *Angelica silvestris*, *A. archangelica*, *Laserpitium latifolium*, infrequently also on *Aegopodium podagraria*.

Phytomyza artemisivora Spencer, 1971

Reference: Martinez, 1998: 271.

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 1 ♂, viii.2000, pasture, MT, B. Merz leg. (CMB).

Notes: This species was described from England, Denmark and Germany. *P. artemisivora* is distributed in the Palaearctic Region from temperate and northern Europe to Kyrgyzstan and Japan. Not confirmed in the Mediterranean area. The larva forms a white linear leaf mine on *Artemisia vulgaris*.

Phytomyza brischkei Hendel, 1922

References: Hendel, 1931-6: 364; Martinez, 1998: 271.

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 25 ♂♂, viii.2000, 2 ♂♂, 21.-31.viii.2000, pasture, MT, B. Merz leg. (CMB); Lenzerheide, Sundroina, 1520 m a.s.l., 1 ♂, 17.v.1997, B. Merz leg. (MHNG). **VS:** Saas-Fee, 1800-2100 m a.s.l., 2 ♂♂, 26.vii.1965, O. Lomholdt leg. (ZMUC).

Notes: The species is only known from temperate Europe, no records are available from northern and southern Europe. Host plants are species of *Trifolium*, particularly *T. repens*, *T. pratense*, *T. fragiferum* and *T. alpinum*.

***Phytomyza calthivora** Hendel, 1934

Material examined: **GE:** Versoix, Bois du Faisan, 400 m a.s.l., 1 ♂, 6.iv.2002, B. Merz leg. (MHNG).

Notes: A rare species of temperate and northern Europe which can be found at localities where *Caltha palustris*, the host plant, occurs. The larva forms a short and broad leaf mine. New for Switzerland.

***Phytomyza calthophila** Hering, 1931

Material examined: **GE:** Versoix, Bois du Faisan, 400 m a.s.l., 1 ♂, 6.iv.2002, B. Merz leg. (MHNG).

Notes: *P. calthophila* is more common in temperate and northern Europe than the preceding species, though both species may occur together at same sites on *Caltha palustris*. Compared with *P. calthivora* the leaf mine formed by the larva is long and narrow. New for Switzerland.

Phytomyza chaerophyllii Kaltenbach, 1856

Reference: Martinez, 1998: 271.

Material examined: **VS:** Leuk Pfywald, 600 m a.s.l., 1 ♂, 25.viii.2001, B. Merz & Landry leg. (MHNG).

Notes: This species is known from Europe including the Mediterranean area and also recorded from Turkey and Japan. The larva forms a linear leaf mine on *Chaerophyllum*, *Anthriscus sylvestris*, less frequently on *Conium maculatum*, *Conopodium majus*, probably also on *Carum*, *Daucus*, *Sison* and *Torilis*.

Phytomyza continua Hendel, 1920

Reference: Martinez, 1998: 271.

Material examined: **ZH:** Zürich, 420 m a.s.l., 1 ♀, 30.vi.1989, B. Merz leg. (MHNG).

Notes: Very common in Europe and also recorded from China, Kamchatka and Japan. The larva feeds along the midrib of leaves of *Cirsium* and *Carduus*.

***Phytomyza crassiseta** Zetterstedt, 1860

Material examined: **GE:** Bernex, Signal, 510 m a.s.l., 1 ♂, 8.vii.2001, B. Merz leg. (MHNG).

Notes: *P. crassiseta* has a typically dilated arista. This Holarctic species is common in Europe and also recorded from Russia (including the Asian part), Kuril Islands, Japan and the United States. The larva forms a linear mine, initially adjoining leaf margin on *Veronica*. New for Switzerland.

***Phytomyza eumorpha** Frey, 1946

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 1 ♂, 21.-31.vii.2000, pasture, MT, B. Merz leg. (CMB).

Notes: This species was described from Finland and Spencer (1976) recorded it later from Sweden. Our locality is the first one in Central Europe. The biology of *P. eumorpha* is unknown. New for Switzerland.

***Phytomyza evanescens** Hendel, 1920

Material examined: **ZH:** Zürich Oerlikon, 430 m a.s.l., 1 ♂, 23.v.1992, B. Merz leg. (MHNG).

Notes: Zlobin (1994) reclassified this species and placed it in *Phytomyza* where it belongs to the *albipennis*-group. *P. evanescens* is characterized by a flap-like appendage on the epandrium. This Holarctic species is distributed in Europe from Island to the Mediterranean area (Dalmatia, Sicily and Spain), and also recorded from Tajikistan, Kuril Islands and North America. The larva feeds internally in the stem of *Ranunculus acris* and *R. lanuginosus*. New for Switzerland.

Phytomyza fallaciosa Brischke, 1880

Reference: Martinez, 1998: 271.

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 1 ♂, viii.2000, pasture, MT, B. Merz leg. (CMB).

Notes: *P. fallaciosa* was described from Poland. Its distribution area includes Europe and the easternmost Palaearctic (Kuril Islands). The larva forms a leaf mine on *Ranunculus*, particularly on *R. repens*, but also on *R. lingua*.

***Phytomyza flavicornis** Fallén, 1823

Material examined: **GE:** Chancy, La Laiterie, 350 m a.s.l., 1 ♂, 18.iv.2003. **JU:** Lucelle, 560 m a.s.l., 1 ♀, 30.iv.1990. All B. Merz leg. (MHNG).

Notes: This Holarctic species is common in Europe and North America. The larva feeds as an internal stem borer on *Urtica dioica*. New for Switzerland.

Phytomyza glechomae Kaltenbach, 1862

Reference: Martinez, 1998: 271.

Material examined: **GE:** Chancy, La Laiterie, 350 m a.s.l., 2 ♂♂, 18.iv.2003; Chancy Vers Vaux, 335 m a.s.l., 1 ♂, 1.vi.2002, B. Merz leg. (MHNG).

Notes: *P. glechomae* is common in Europe, Japan and North America. The larva forms a distinctive leaf mine on *Glechoma hederacea*.

***Phytomyza gymnostoma** Loew, 1858

Material examined: **SZ:** Brunnli, 900 m a.s.l., 1 ♀, 26.vi.1990, B. Petersen leg. (ZMUC). **VS:** Leuk Pfynwald, 630 m a.s.l., 1 ♂, 21.iv.1998, B. Merz & Botta leg. (MHNG); Saas-Fee, 2000-2200 m a.s.l., 1 ♀, 21.vii.1965, O. Lomholdt leg. (ZMUC).

Notes: The species was described from Poland and later recorded from further European countries, Turkey and Turkmenistan. Recently, this large species is considered to be a pest on *Allium* sp. with a certain economic importance (Spencer, 1973). New for Switzerland.

***Phytomyza heracleana** Hering, 1937

Material examined: **BE:** Berner Alpen, Grindelwald env., 2500 m a.s.l., 1 ♂, 1 ♀, 16.vi.1997, B. Mocek leg. (CBM).

Notes: *P. heracleana* was described from Germany and it is distributed mainly in countries of temperate Europe. Rarely it is also recorded from the Mediterranean

area (Bulgaria and Italy). The larva forms a regular, interparenchymal blotch leaf mine on *Heracleum sphondylium*, *H. sibiricum*, and *H. mantegazzianum*. New for Switzerland.

****Phytomyza hirsuta* Spencer, 1976**

Material examined: **GR**: Lenzerheide, Piz Danis, 2250-2490 m a.s.l., 1 ♂, 12.vii.1996, B. Merz leg. (MHNG).

Notes: This species was described from Finland and Norway. Later it was also recorded from Sweden. Recently this species was found in the High Tatra Mts in Slovakia (Černý & Vála, 2005). Our record represents the southernmost locality in Europe. New for Switzerland.

****Phytomyza homogyneae* Hering, 1927**

Material examined: **GR**: Lenzerheide, 2000 m a.s.l., 1 ♂, 21-31.viii.2000, pasture, MT, B. Merz leg. (CMB).

Notes: This mountain species was described from Germany, where it was reared from *Homogyne alpina*, where the larva forms a linear mine. The species is known from Central European mountains (recently found in the Šumava Mts, Czech Republic, Černý & Vála, 2005) but also from China, Japan and Taiwan. New for Switzerland.

***Phytomyza nigripennis* Fallén, 1823**

References: Hendel, 1931-6: 439; Martinez, 1998: 272.

Material examined: **GE**: Chancy, La Laire, 350 m a.s.l., 1 ♂, 24.iv.2003, B. Merz & F. Amiet leg. (MHNG). **ZH**: Zürich Allmend, 450 m a.s.l., 1 ♀, 1.v.1995, B. Merz leg. (MHNG); Zürich Waldgarten, 1 ♂, 31.iii.1997, B. Merz leg. (MHNG).

Notes: This species is characterized by conspicuously dark wings. It is distributed in temperate and northern Europe, with a few localities in Northern Italy and former Yugoslavia. Its host plant is not known, but it may attack *Anemone nemorosa*. The larva feeds probably in the stem or the root, early stages unknown (Spencer, 1976).

***Phytomyza notata* Meigen, 1830**

Reference: Martinez, 1998: 272.

Material examined: **GR**: Lenzerheide, 2000 m a.s.l., 8 ♂♂, viii.2000, pasture, MT, B. Merz leg. (CMB).

Notes: This species is known from temperate and northern Europe including northern Italy. The larva forms a short, broad, linear mine recorded on *Ranunculus acer*, *R. auricomus*, *R. bulbosa* and particularly on *R. repens*.

****Phytomyza origani* Hering, 1931**

Material examined: **GE**: Cartigny, Moulin de Vert, 470 m a.s.l., 1 ♂, 4.vi.2001, M. Eggenberger & B. Merz leg. (MHNG).

Notes: *P. origani* was described from Germany and later recorded from Bulgaria, the Czech Republic, Denmark, England, France, Hungary, Lithuania, Poland

and Spain. The larva forms a typical leaf mine on *Origanum vulgare* (Spencer, 1976). New for Switzerland.

****Phytomyza pauliloewii* Hendel, 1920**

Material examined: VS: Branson, Follatères, 450-950 m a.s.l., 1 ♂, 29.iii.2002, B. Merz leg. (MHNG).

Notes: This species is only locally distributed in temperate Europe but also known from northern Europe (Finland and Sweden) and the Mediterranean area (Italy). The larva forms a small regular blotch leaf mine on *Pimpinella* spp. and *Peucedanum oreoselinum*. New for Switzerland.

***Phytomyza plantaginis* Robineau-Desvoidy, 1851**

Reference: Martinez, 1998: 272.

Material examined: VS: Leuk Pfynwald, 650 m a.s.l., 1 ♂, 23.ix.1992, B. Merz & Otto leg. (MHNG), 630 m a.s.l., 1 ♂, 6.viii.1997, B. Merz leg. (MHNG).

Notes: *P. plantaginis* is a common species of the West Palaerctic and North America (Canada, United States). Rarely also known from the East Palaerctic, Afrotropical, Oriental and Australasian Regions. The larva forms a narrow, white linear leaf mine on *Plantago lanceolata* and *P. major*.

****Phytomyza platystoma* (Hendel, 1920)**

Material examined: VS: Branson, Follatères, 450-950 m a.s.l., 3 ♂♂, 29.iii.2002, B. Merz leg. (MHNG).

Notes: This alpine species was described as *Napomyza platystoma* but Spencer & Martinez (1987) transferred it to *Phytomyza*. It was described from Austria (Piestingtale, Nördliche Voralpen). This is the second record from Central Europe. Its biology is unknown. New for Switzerland.

****Phytomyza pubicornis* Hendel, 1920**

Material examined: GE: Avusy, Moulin de la Grave, 360 m a.s.l., 1 ♂, 18.iv.2003, B. Merz leg. (MHNG). ZH: Zürich Allmend, 440 m a.s.l., 1 ♂, 17.iv.1996, B. Merz leg. (MHNG).

Notes: This species is distributed in temperate and northern Europe. No records are known from the Mediterranean area. The larva forms a short linear leaf mine on *Aegopodium podagraria*. New for Switzerland.

****Phytomyza pullula* Zetterstedt, 1848**

Material examined: ZH: Affoltern a. A., 600 m a.s.l., 1 ♂, 8.viii.1987, B. Merz leg. (MHNG).

Notes: *P. pullula* belongs to the species with a Holarctic distribution. It is common in Europe and North America. The larva forms a narrow linear leaf mine on *Achillea*, *Anthemis*, *Chrysanthemum vulgare*, *Matricaria*, and most commonly on *M. inodora*. New for Switzerland.

***Phytomyza ranunculi* (Schrank, 1803)**

References: Hendel, 1931-6: 467; Martinez, 1998: 272.

Material examined: **GR:** Ausserferrera, 1300-1550 m a.s.l., 1 ♂, 18.vi.1994, B. Merz leg. (MHNG); Lenzerheide, 2000 m a.s.l., 1 ♂, 14.-21.vii.2000, pasture, MT, B. Merz leg. (CMB); Lenzerheide See, 1500 m a.s.l., 1 ♂, 15.vii.2000, B. Merz leg. (MHNG); Lenzerheide Sundroina, 1520 m a.s.l., 1 ♂, 17.v.1997, B. Merz leg. (MHNG). **TI:** Monte San Giorgio, 600-1100 m a.s.l., 1 ♂, 5.vii.2001, B. Merz leg. (MHNG). **ZH:** Zürich Zürichberg, 600 m a.s.l., 1 ♂, 5.v.1993, B. Merz leg. (MHNG), 1 ♂, 8.v.1996, P. Walser leg. (MHNG). **VD:** Bonvillars en fauchant [= sweeping], 630 m a.s.l., 1 ♀, 25.iv.1988, D. Burekhardt leg. (MHNG).

Notes: *P. ranunculi* is a common species mining Ranunculaceae in the Holarctic Region.

***Phytomyza ranunculicola** Hering, 1949

Material examined: **GE:** Bernex, Chante-Merle, 415 m a.s.l., 1 ♂, 20.v.2002, B. Merz leg. (MHNG).

Notes: The species was described from Germany. It is distributed in temperate Europe but it is probably absent from Scandinavia and the Mediterranean area. The larva forms a secondary blotch leaf mine on *Ranunculus acer*. New for Switzerland.

***Phytomyza rapunculi** Hendel, 1927

Material examined: **BE:** Berner Alpen, Grindelwald env., 2500 m a.s.l., 1 ♂, 1 ♀, 16.vi.1997, B. Mocek leg. (CBM). **GR:** Lenzerheide, 2000 m a.s.l., 1 ♂, viii.2000, pasture, MT, B. Merz leg. (CMB).

Notes: This European species was described from Austria and later recorded particularly in temperate and southern Europe. In Scandinavia it is known only from Sweden (Spencer, 1990). The larva forms a linear mine on *Campanula rapunculoides*, *C. persicifolia* and *Phyteuma*. New for Switzerland.

***Phytomyza rhabdophora** Griffiths, 1964

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 1 ♂, viii.2000, pasture, MT, B. Merz leg. (CMB). Lenzerheide, Sundroina, 1550 m a.s.l., 1 ♂, 18.vii.1997, B. Merz leg. (MHNG). **VS:** Saas-Fee, 1800 m a.s.l., 1 ♂, 21.vii.1965, O. Lomholdt leg. (ZMUC).

Notes: The type locality is in Germany and the species is distributed in temperate Europe, but it is apparently missing in the Mediterranean area. Its biology is unknown, larvae feed probably on *Leontodon* (Tschirnhaus, 1969). New for Switzerland.

***Phytomyza rostrata** Hering, 1933

Material examined: **VS:** Leuk Pfywald, 600 m a.s.l., 1 ♂, 2.vii.2001, B. Merz leg. (MHNG).

Notes: The species was described from Germany and it is distributed in temperate Europe, but apparently absent from the Mediterranean area. The larva forms a typical mine on *Euphrasia*, *Melampyrum*, *Odontites* and *Rhinanthus* (Spencer, 1976). New for Switzerland.

Phytomyza rufipes Meigen 1830

Reference: Martinez, 1998: 272.

Material examined: **GE:** Cartigny, Moulin de Vert, 360 m a.s.l., 1 ♂, 1.v.1999, B. Merz leg. (MHNG).

Notes: This pale species is common in the West Palaearctic and North America. The larva feeds inside the stem or midrib of larger leaves on Brassicaceae, mainly on *Brassica*.

***Phytomyza sedi** Kaltenbach, 1869

Material examined: **NE:** St. Blaise, Les Riedes, 470 m a.s.l., 2 ♂♂, 19.v.2001, B. Merz leg. (MHNG).

Notes: This species was described from Boppard (Germany) and later recorded from Spain under the synonym *Ph. catalaunica* Spencer, 1960. Our record confirms the occurrence in Central Europe. *Sedum* is the host plant of this species. New for Switzerland.

***Phytomyza soenderupi** Hering, 1941

Material examined: **GE:** Versoix, Bois du Faisan, 400 m a.s.l., 1 ♂, 6.iv.2002, B. Merz leg. (MHNG).

Notes: This species was described from Denmark and later recorded from Belgium, the British Isles, the Czech Republic, Estonia, Germany and Norway. The larva feeds within the petiole of *Caltha palustris*. New for Switzerland.

Phytomyza tenella Meigen, 1830

Reference: Martinez, 1998: 272.

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., pasture, 2 ♂♂, 23.viii.-9.ix.2000, MT, B. Merz leg. (CMB); Juf-Stallerberg, 2400 m a.s.l., 1 ♂, 18.viii.1991, B. Merz & A. Freidberg leg. (MHNG).

Notes: *Phytomyza tenella* is distributed in Europe, China, Turkey, the United States and the Afrotropical Region (Ethiopia). The larva feeds in seed-heads of *Pedicularis palustris* and almost certainly other *Pedicularis*.

***Phytomyza varipes** Macquart, 1835

Material examined: **GR:** Lenzerheide, Sundroina, 1550 m a.s.l., 1 ♂, 18.vii.1997, B. Merz leg. (MHNG).

Notes: This rare species was described from Northern France. The larva feeds in seed-heads of *Rhinanthus*. New for Switzerland.

Phytomyza vitalbae Kaltenbach, 1872

Reference: Martinez, 1998: 272.

Material examined: **GR:** Lenzerheide, 2000 m a.s.l., 1 ♂, 14.-21.vii.2000, pasture, MT, B. Merz leg. (CMB). **VS:** Leuk Pfynwald, 600 m a.s.l., 2 ♂♂, 25.viii.2001, B. Merz & Landry leg. (MHNG).

Notes: A species known from various European countries and also from Canada, South Africa, China, Nepal, Taiwan and Australia. The larva forms a long, narrow, upper surface leaf mine on *Clematis vitalba*, *C. alpina* and some other *Clematis*.

Phytomyza wahlgreni Rydén, 1944

References: Griffiths, 1964: 411; Spencer, 1976: 527; Martinez, 1998: 272.

Material examined: **AG:** Thalheim, 550 m a.s.l., 1 ♂, 20.v.1992, B. Merz leg. (MHNG). **GR:** Lenzerheide, 1600 m a.s.l., 1 ♂, 8.x.1991, B. Merz & M. Eggenberger leg. (MHNG); Lenzerheide, 2000 m a.s.l., 3 ♂♂, 14.-21.vii.2000, 2 ♂♂, 23.-31.viii.2000, pasture, MT, B. Merz leg. (CMB). **NE:** St. Blaise, Les Riedes, 470 m a.s.l., 1 ♂, 19.v.2001, B. Merz leg. (MHNG). **VS:** Saas-Fee, 2000 m a.s.l., 3 ♂♂, 18.vii.1965, 2400 m a.s.l., 1 ♀, 19.vii.1965, 2200 m a.s.l., 2 ♀♀, 21.vii.1965, 1800 m a.s.l., 1 ♀, 24.vii.1965, O. Lomholdt leg. (ZMUC).

Notes: A Holarctic species distributed in temperate and northern Europe. In the Mediterranean area known to occur in Italy. It is also recorded from the United States, China and the Kuril Islands. From Switzerland recorded by Griffiths (1964) for the first time (**VS:** Bérisal, under the synonym *P. taraxacocecis* Hering, 1949). The larva feeds in the midrib of leaves on *Taraxacum* spp.

***Pseudonapomyza atra** (Meigen, 1830)

Material examined: **FR:** Mt. Vully, Bas Vully, 460-650 m a.s.l., 1 ♂, 6.vi.2003, B. Merz & Amiet leg. (MHNG). **GE:** Bernex, Chante-Merle, 415 m a.s.l., 1 ♂, 16.viii.2002, B. Merz leg. (MHNG); Cartigny, Moulin de Vert, 360 m a.s.l., 1 ♂, 2.vi.2002, B. Merz leg. (MHNG); Chancy, La Laire, 350 m a.s.l., 1 ♂, 9.vii.2002, B. Merz leg. (MHNG). **VS:** Visperterminen, Giw-Gebidemsee, 1900-2200 m a.s.l., 1 ♂, 28.viii.2001, B. Merz & Landry leg. (MHNG). **ZH:** Zürich-Hönggerberg, 600 m a.s.l., 1 ♂, 26.iv.1993, B. Merz leg. (MHNG).

Notes: *Ps. atra* is generally distributed in the Holarctic Region. It is common in northern and temperate Europe (Černý 1992, 1998, 2005a). Spencer (1973) considered it to be rare in the Mediterranean area. The larva forms a short, narrow mine on Gramineae, feeding on many genera, e.g. *Apera*, *Avena*, *Hordeum*, *Lolium*, *Phalaris*, *Poa*, *Secale* and *Triticum*. New for Switzerland.

***Pseudonapomyza errata** Zlobin, 1993

Material examined: **GE:** Russin, Les Baillels, 405 m a.s.l., 1 ♂, 30.vi.2001, B. Merz leg. (MHNG). **NE:** St. Blaise, Les Riedes, 470 m a.s.l., 2 ♂♂, 19.v.2001, B. Merz leg. (MHNG). **VS:** Leuk Pfynwald, 600 m a.s.l., 1 ♂, 2.vii.2001; Visperterminen, 1400 m a.s.l., 1 ♂, 27.vii.1991, B. Merz leg. (MHNG).

Notes: This species was described from Russia, Uzbekistan and Mongolia and it is also recorded from the Czech Republic and France. Its biology is unknown. New for Switzerland.

***Pseudonapomyza eurasiatica** Zlobin, 2003

Material examined: **VS:** Leuk Pfynwald, 600 m a.s.l., 1 ♂, 6.vi.2001, 1 ♂, 7.vi.2001, B. Merz & Landry leg. (MHNG).

Notes: Recently described from the male holotype originating from Tajikistan and paratypes from Greece, Kazakhstan, Turkmenistan and Ukraine by Zlobin (2003b). This is the first record from Central Europe and represents the westernmost boundary of its distribution area. Biology is unknown. New for Switzerland.

Pseudonapomyza europaea Spencer, 1973

References: Papp, 1984: 313; Spencer, 1973: 270; Martinez, 1998: 272.

Material examined: VS: Leuk Pfynwald, 600 m a.s.l., 1 ♂, 25.v.1997, B. Merz leg. (MHNG), 2 ♂♂, 6.vi.2001; 1 ♂, 2.vii.2001; 1 ♂, 25.viii.2001, B. Merz & Landry leg. (MHNG).

Notes: Widely distributed in Europe and also recorded from Turkey and Japan (Černý, 2005a). It is less common than *Ps. atra*. Spencer (1973) described this species from Italy (holotype), Austria, Macedonia, Serbia, Slovenia and Switzerland (VS: Stalden). Its biology is unknown.

****Pseudonapomyza strobliana* Spencer, 1973**

Material examined: GE: Russin, Les Bailleys, 405 m a.s.l., 1 ♂, 8.viii.2002, B. Merz leg. (MHNG). VS: Leuk Pfynwald, 600 m a.s.l., 1 ♂, 6.vi.2001, 1 ♂, 25.viii.2001, B. Merz & Landry leg. (MHNG).

Notes: The species was described from Dalmatia and Austria. The center of its distribution area is probably in the Mediterranean area (Spain, Bulgaria, Turkey) but recently it was also recorded from the Czech Republic, France, Germany, Hungary, Sweden and Ukraine (Černý, 1998, 2005a). Its biology is unknown. New for Switzerland.

****Pseudonapomyza vota* Spencer, 1973**

Material examined: VS: Leuk Pfynwald, 600 m a.s.l., 1 ♂, 7.vi.2001; Leuk Platten, 625 m a.s.l., 1 ♂, 8.vi.2001, all B. Merz & Landry leg. (MHNG).

Notes: This species was described from a single male originating from Spain. The distribution area of this species ranges from Spain to Israel, i.e. throughout the Mediterranean area. Biology of the species is unknown. New for Switzerland.

CONCLUSIONS

This review embraces new data on the fauna of mining flies or Agromyzidae occurring in Switzerland and adds 92 species to the 140 species listed by Martínez (1998) bringing the list of Swiss agromyzids to 232 species. The potential number of Swiss Agromyzidae species is probably much higher, given the different origins of the native fauna and the unusually diverse pattern of ecosystems. Such a conclusion seems to be confirmed by a comparison of species richness in neighbouring countries. Franz (1989) listed 270 species from Austria and Tschirnhaus (1999) 552 species from Germany. According to Spencer (1992) many species known from the Italian alpine valleys will probably also be found in the Swiss Alps. Süß (1999, 2001, 2002) recorded 224 species in Italy (173 from North Italy); of this number 112 species are common for both countries and 112 species are known exclusively from Italy. So far, no species of *Hexomyza* Enderlein, 1936, has been recorded from Switzerland, although 6 species are known in Europe and 5 of them live in Italy. Likewise *Ptochomyza* Hering, 1942, with three European species and *Nemorimyza posticata* (Meigen, 1830) known from adjoining countries, have not been found so far in Switzerland. Of 10 European species of *Phytobia* Liroy, 1864, only *P. mallochii* is known from Switzerland, while *Melanagromyza* Hendel, 1920, is represented by four species only (11 % of the European species) and *Liriomyza* Mik, 1894, by 18 species (13 %). There is thus good evidence that the list of Swiss agromyzids is far from final.

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